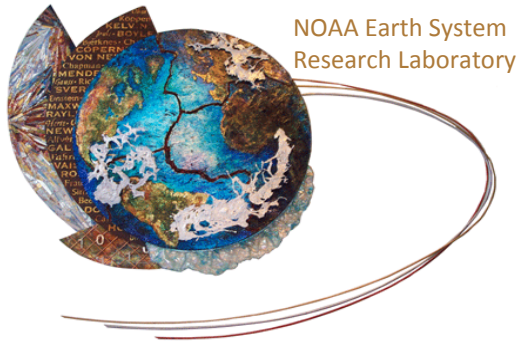

Verifying reforecast-calibrated probabilities for 6-10 day and week +2 850 hPa temperatures

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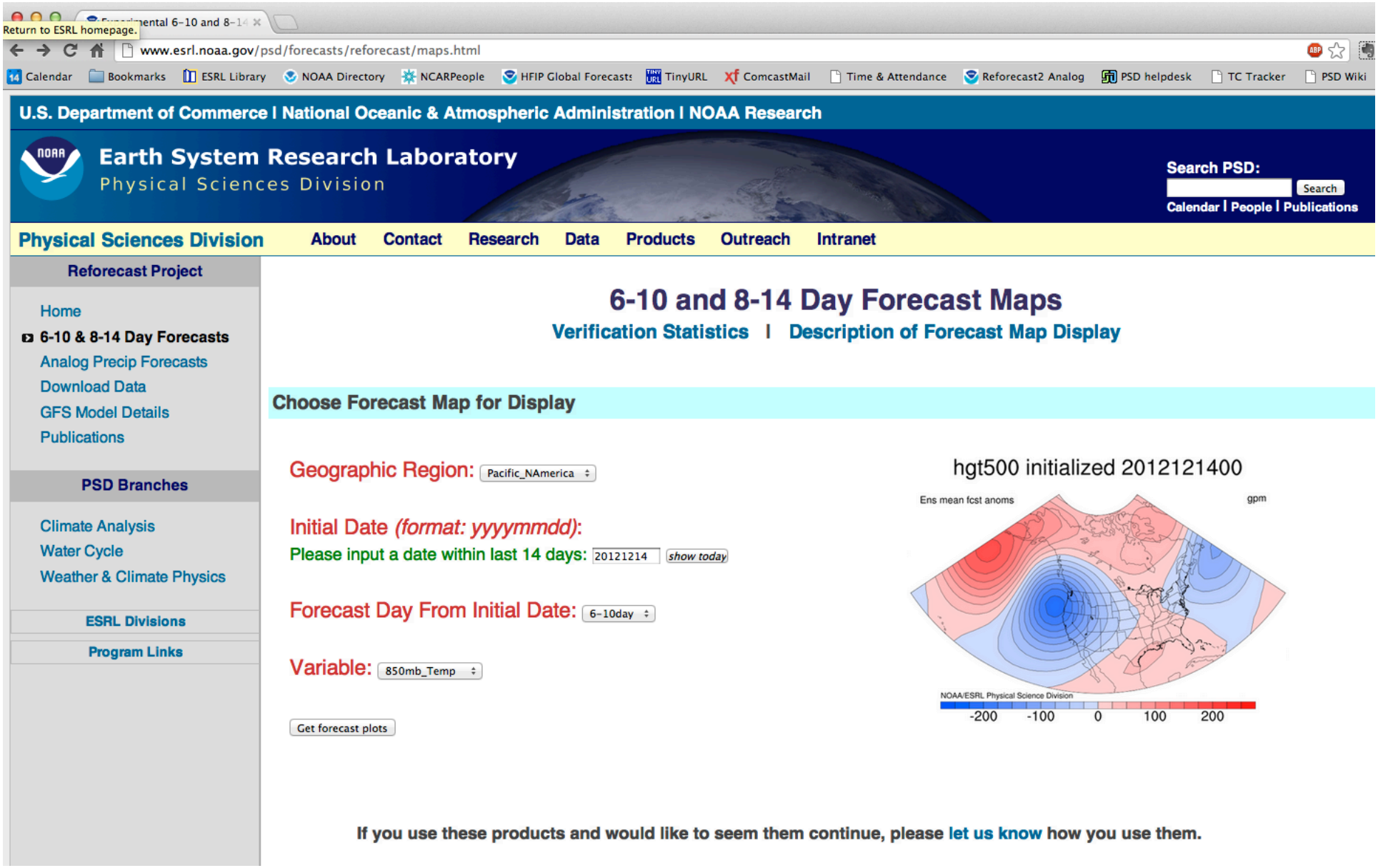
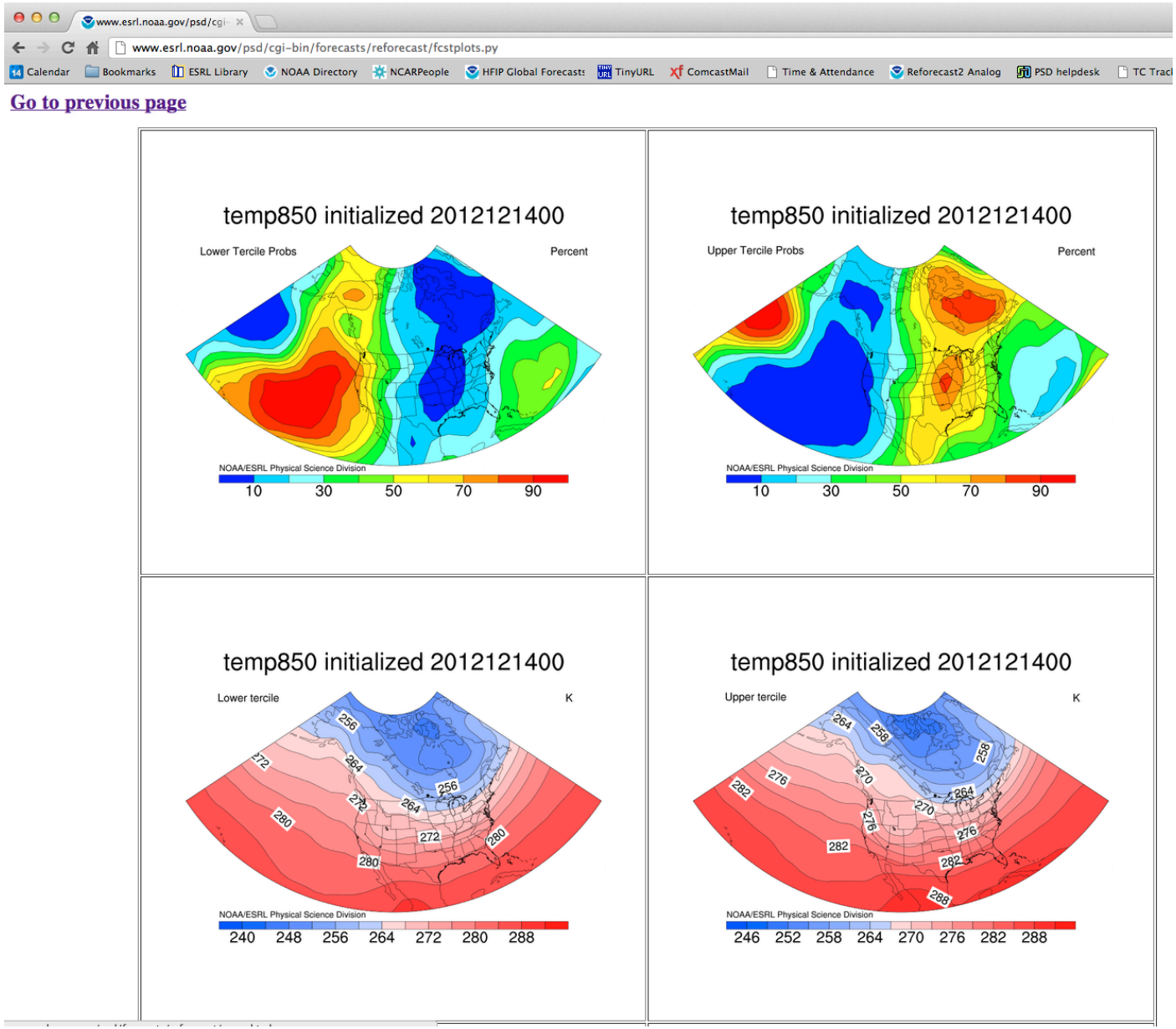
Also: Gary Bates, Jeff Whitaker, Don Murray

Previously: web page for calibrated V1 reforecasts



Typical T850 experimental product from ESRL



these sorts of products are presumably useful to CPC.

We’d like to replace this web page with one that serves up calibrated forecasts from reforecast v2.

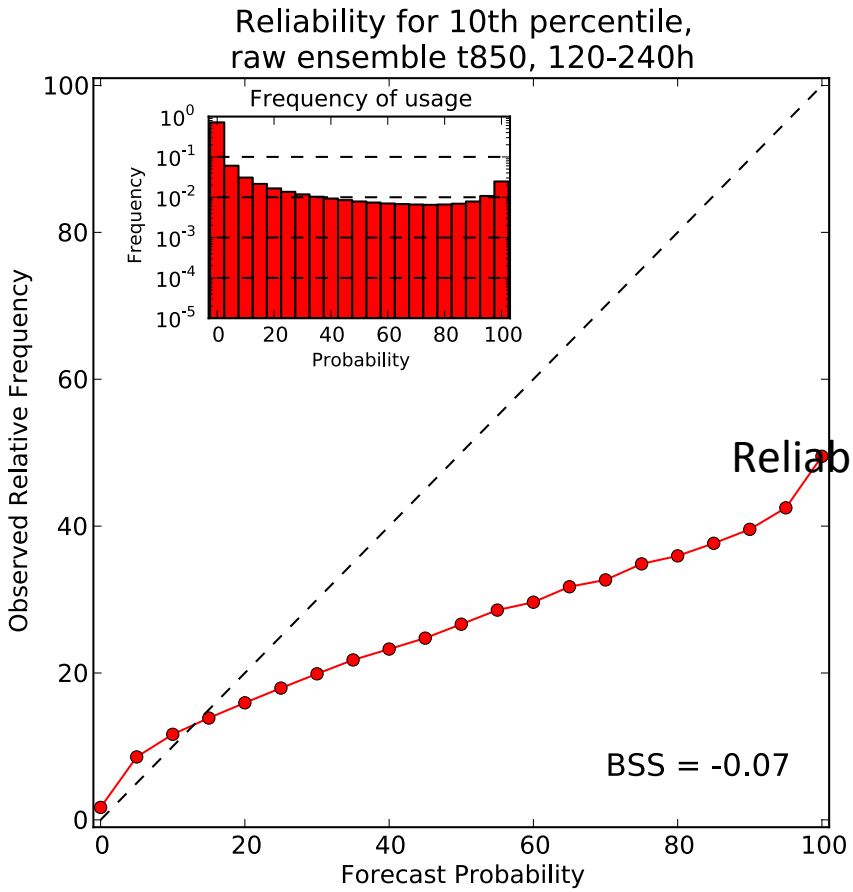
How much improvement will we see over the raw GEFS forecasts?

Method for testing calibration with version 2 reforecasts

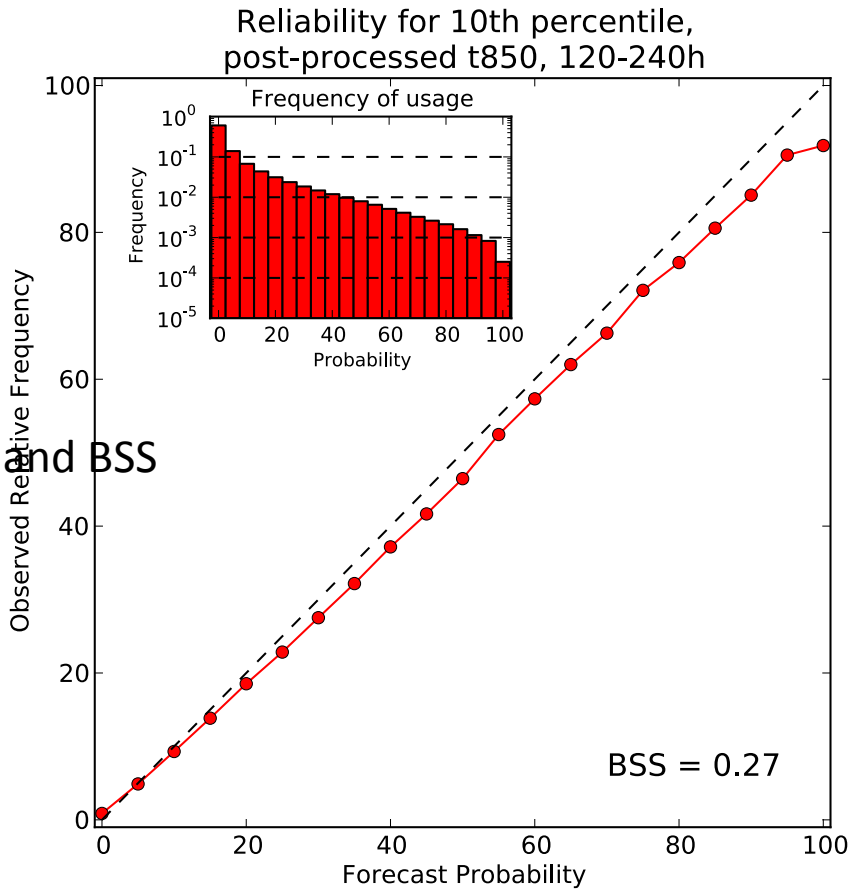
- Post-processed using the "nonhomogeneous Gaussian regression" of Gneiting et al. (MWR, May 2005). Linear regression approach, but allows the raw ensemble spread to define the amount of spread in the predicted Gaussian forecast distribution.
- Reliability diagrams composited over data from Dec 1984 – Dec 2011.
- Data is limited to the 1-degree, lat-lon grid that encompasses CONUS.
- Cross-validated, with regression model's training data excluding a given year's data, e.g., train 2011 based on 1984-2010 data.
- Forecast/analysis pairs every third day for the given month and the surrounding two months (x 26 years) used as training data. This means 3x10x26 = 780 training samples typically used.
- When evaluating "raw"ensemble in following plots, actually evaluating a Gaussian pdf fit to the sample mean and spread.

+5 to +10 day forecasts (120 to 240 h)

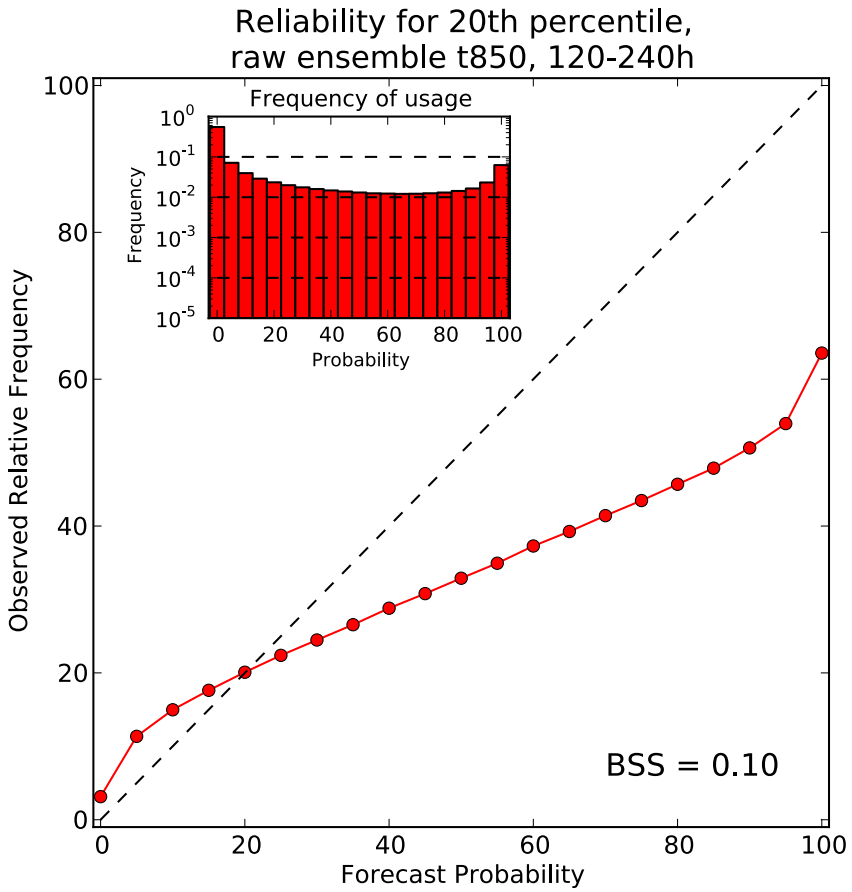
Reliability and BSS: lower decile

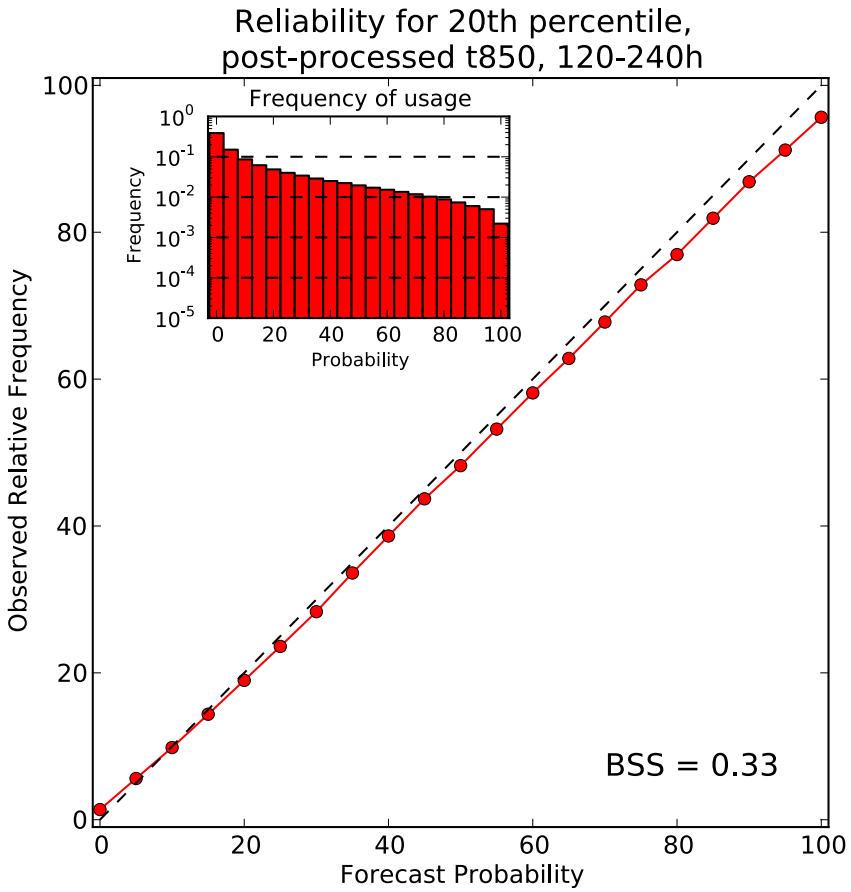


Reliability and BSS

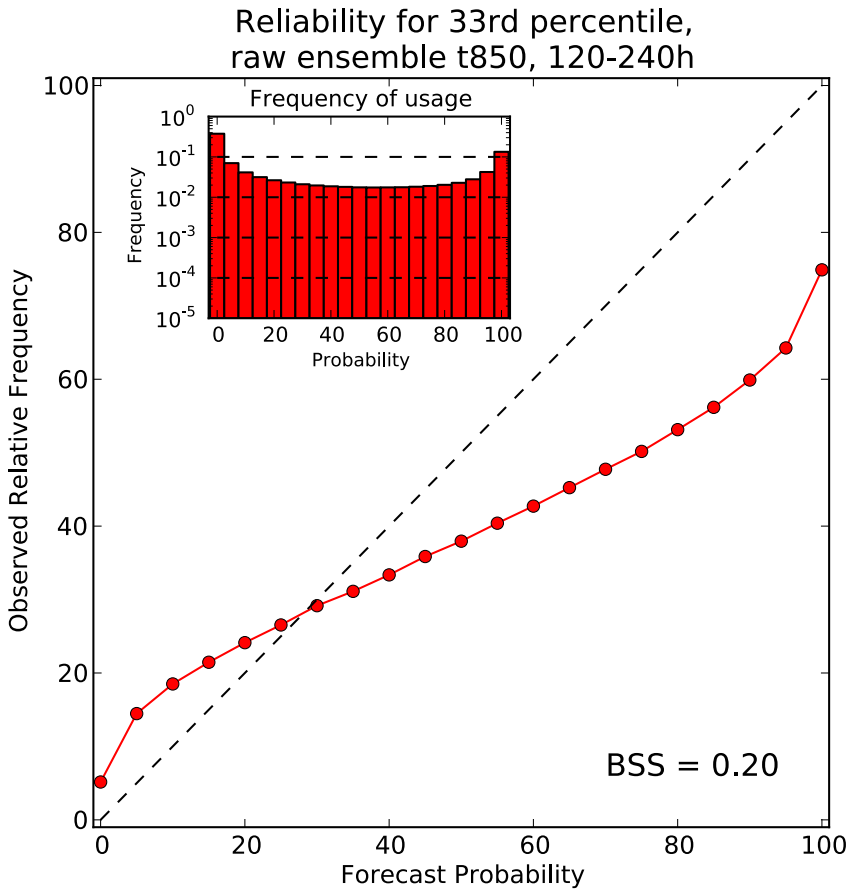


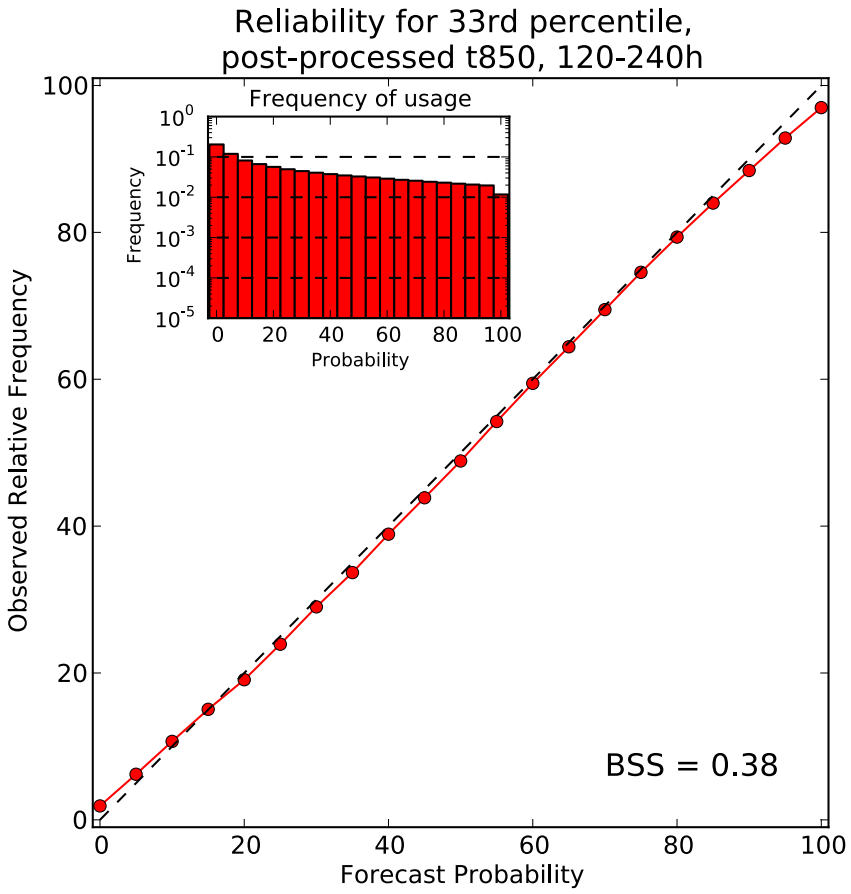
Lower quintile



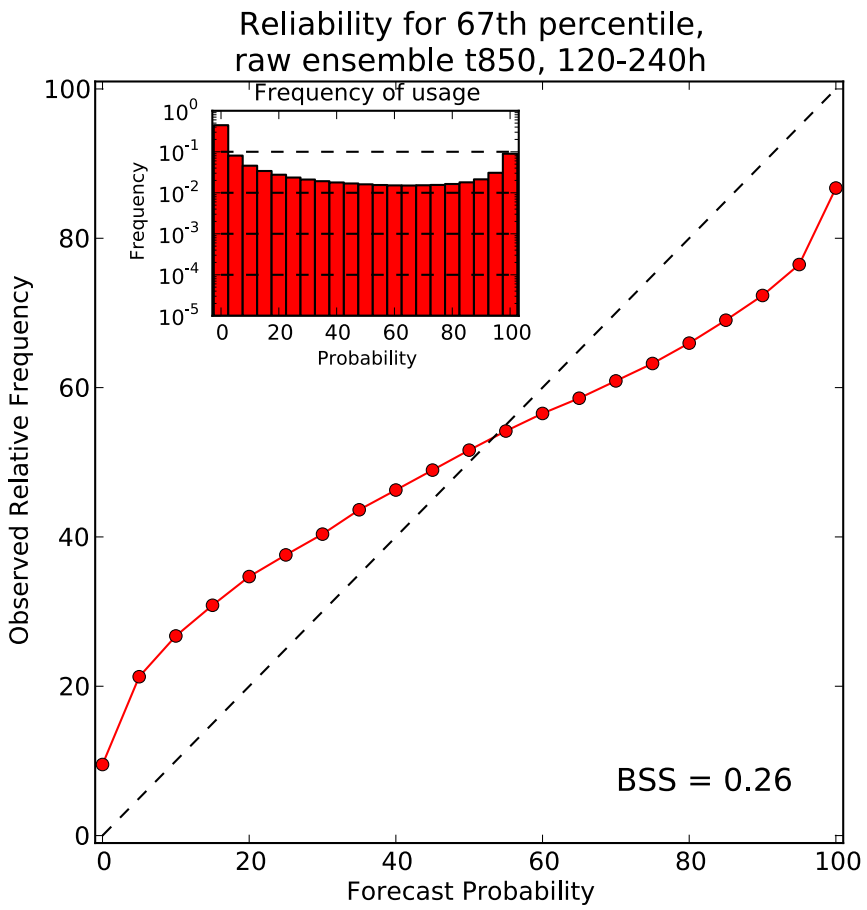


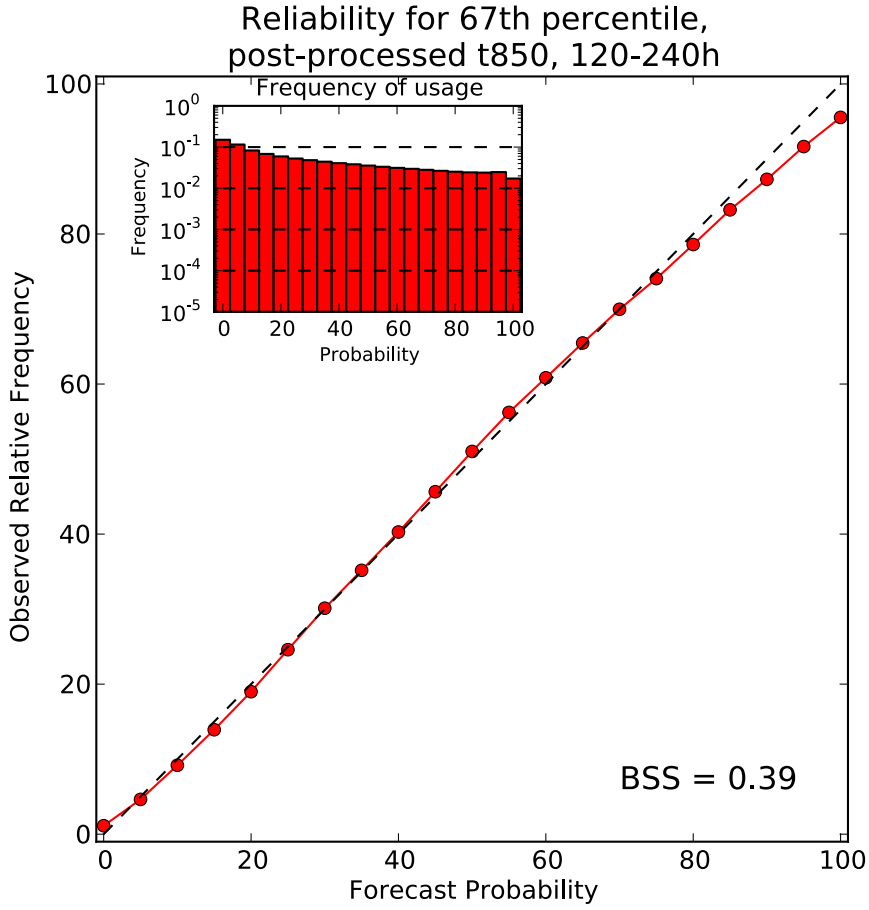
Lower tercile



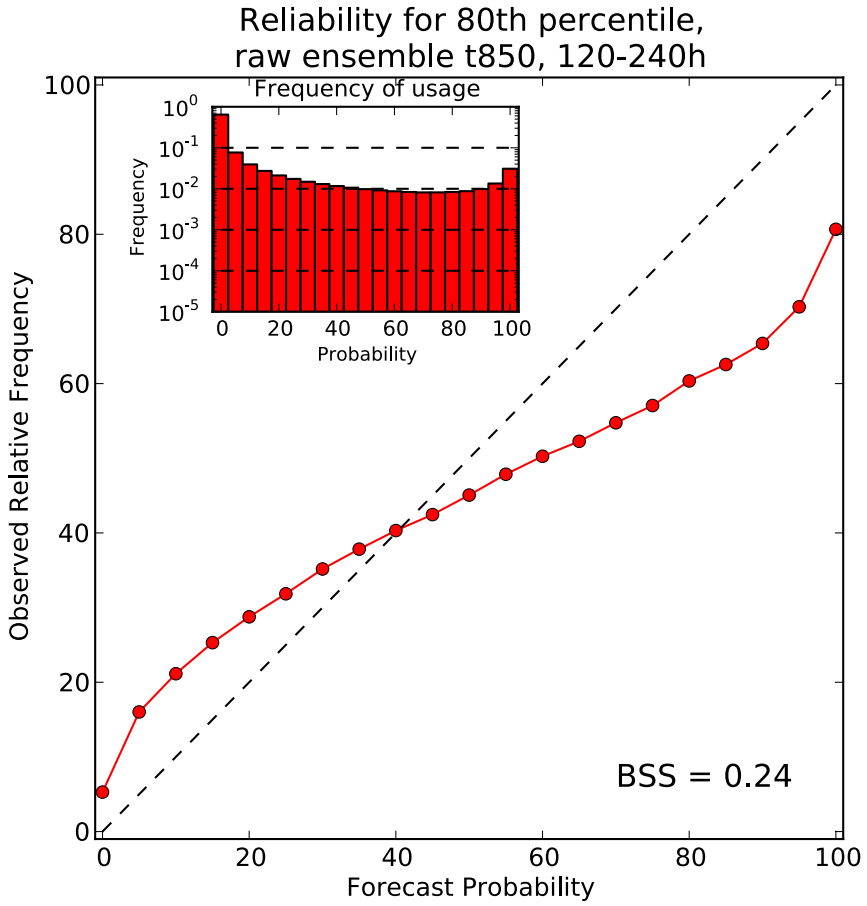


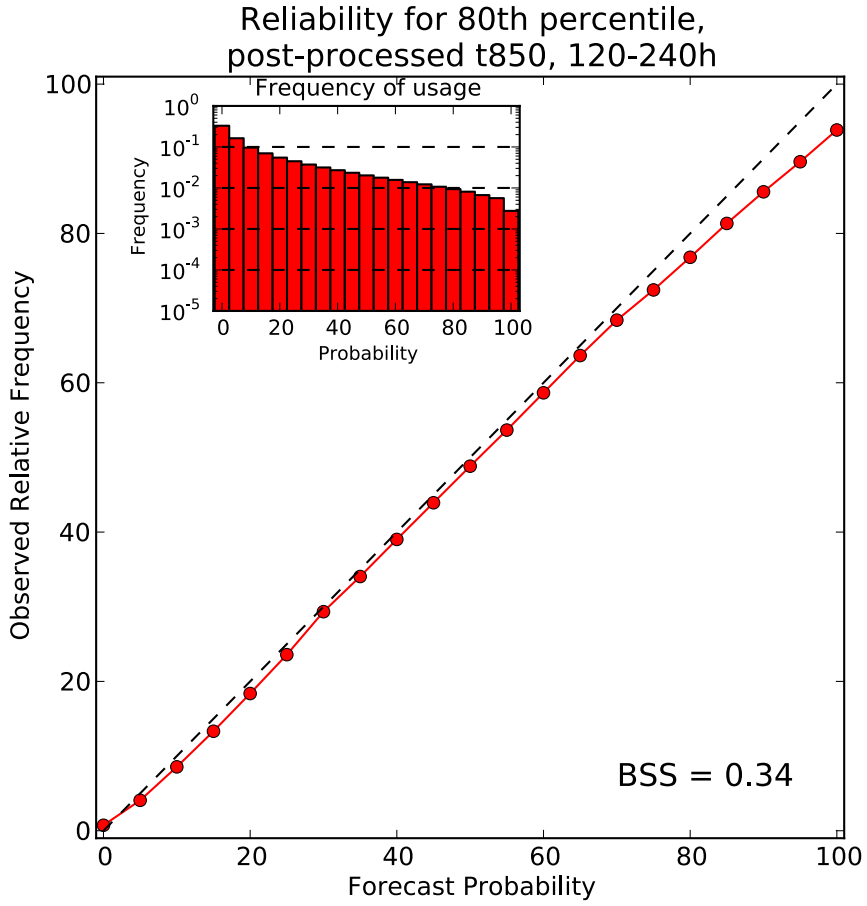
Upper tercile



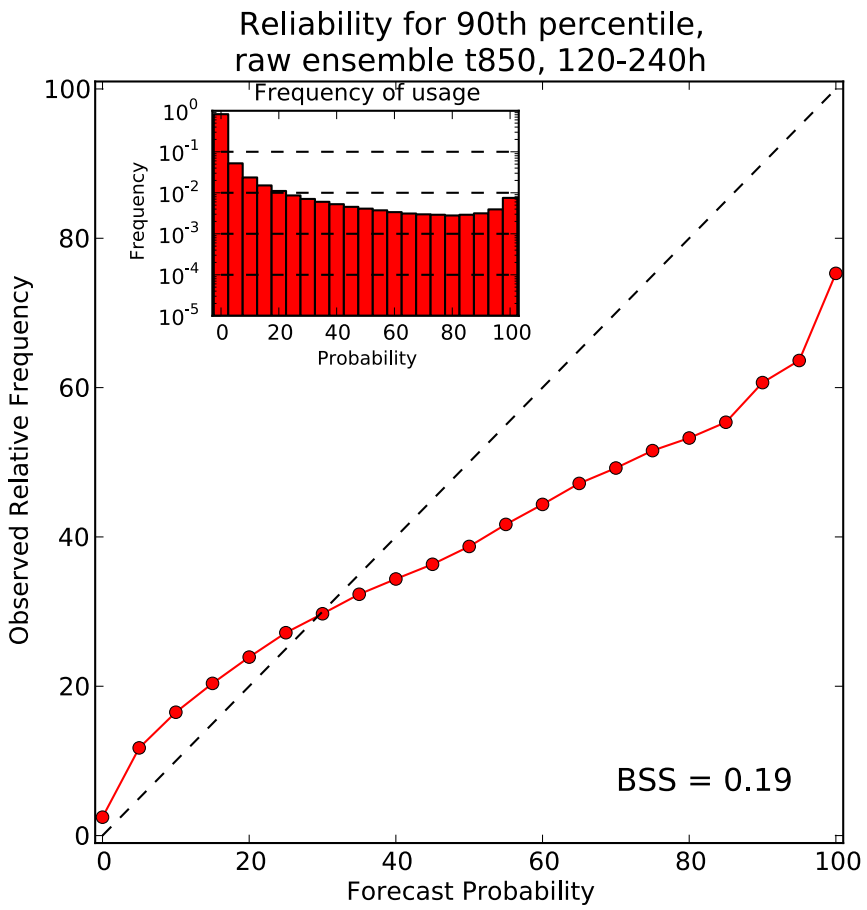


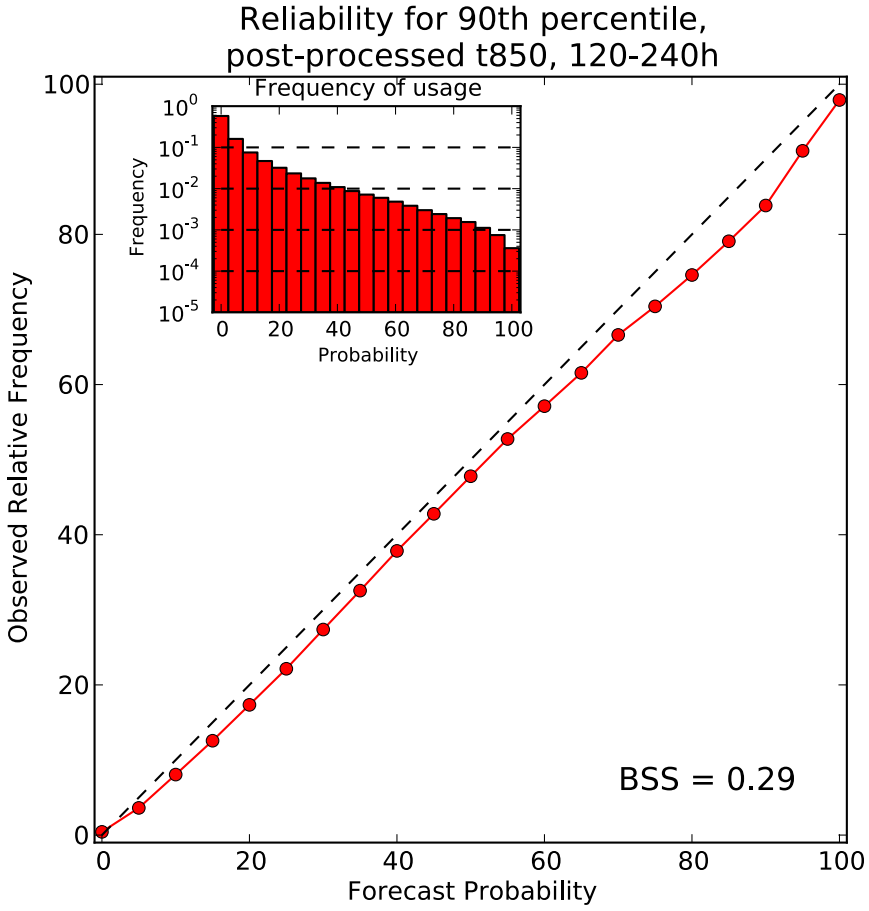
Upper quintile





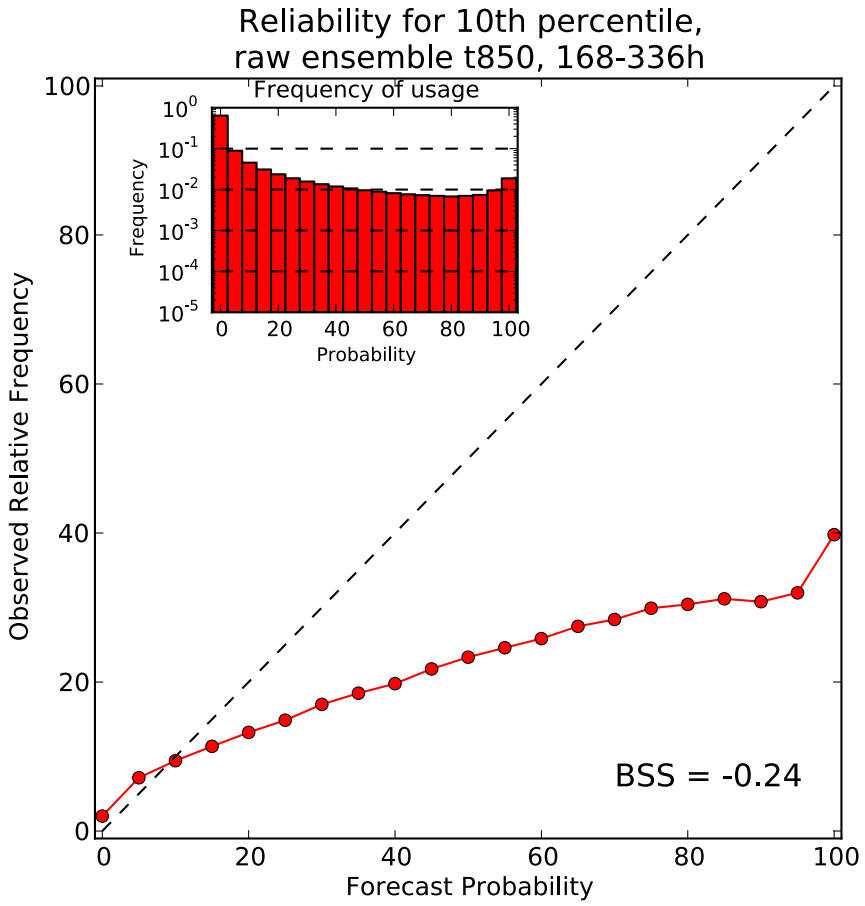
Upper decile

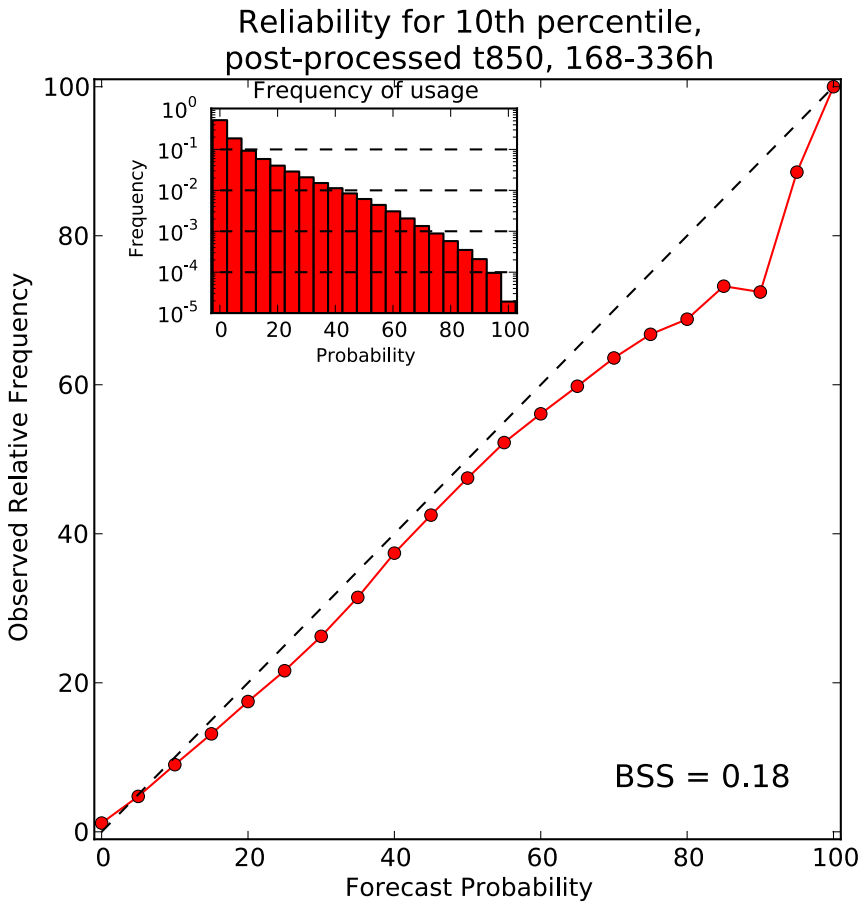




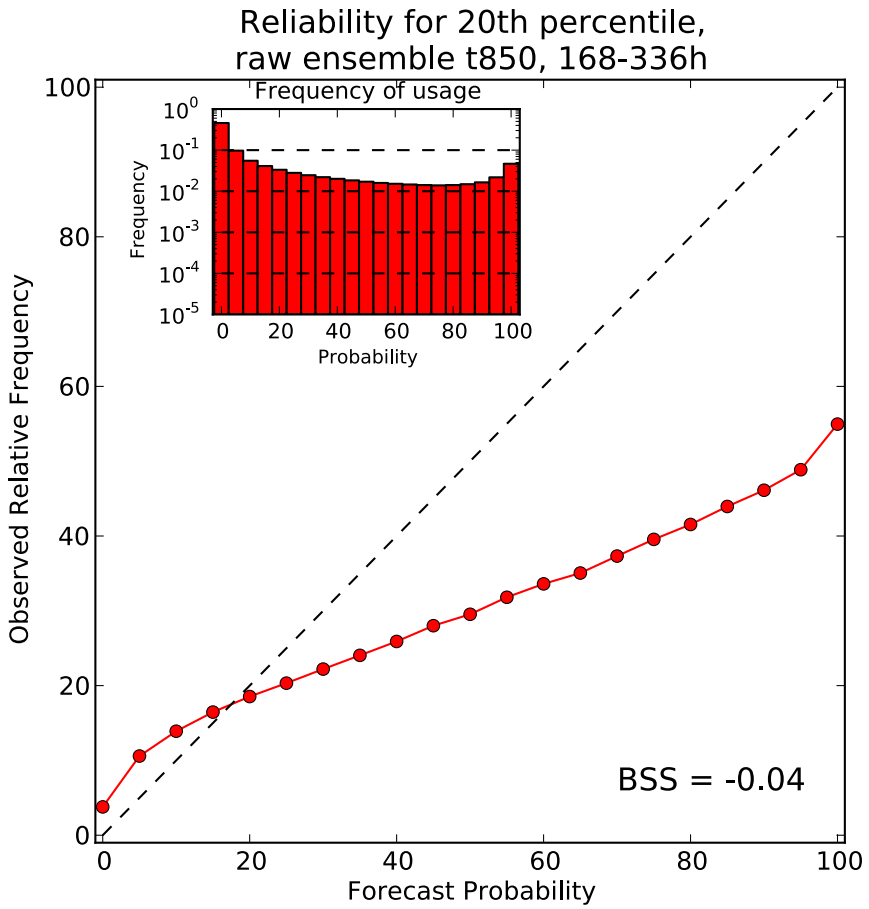
+7 to +14 day forecasts (168 to 336 h)

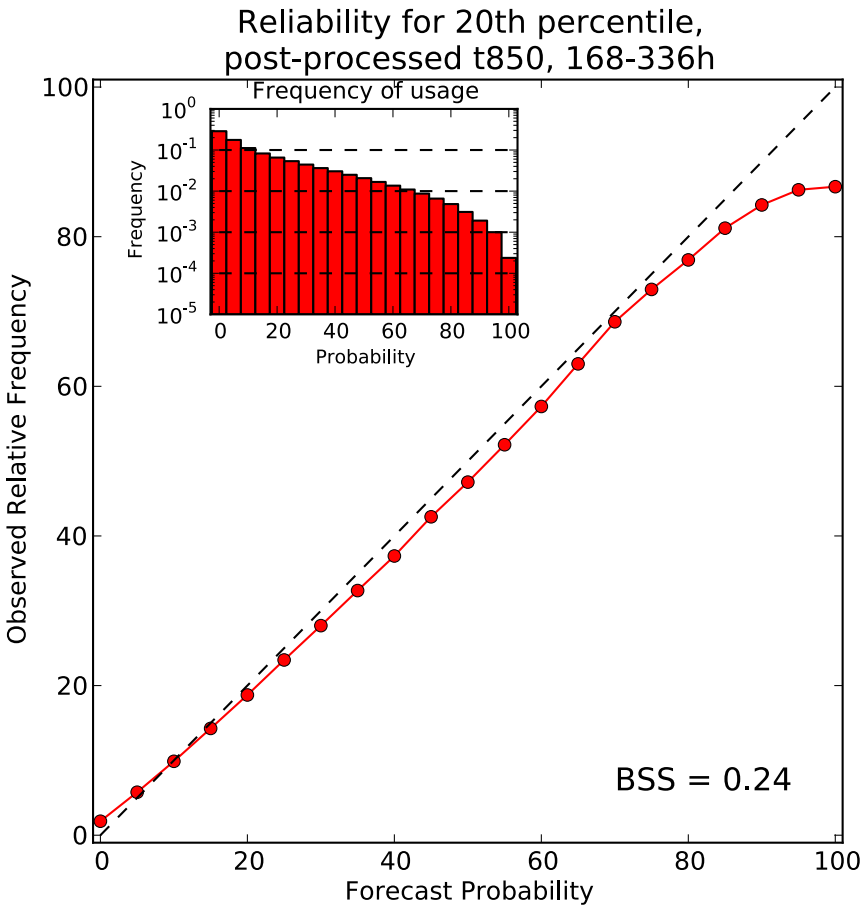
Reliability and BSS: lower decile



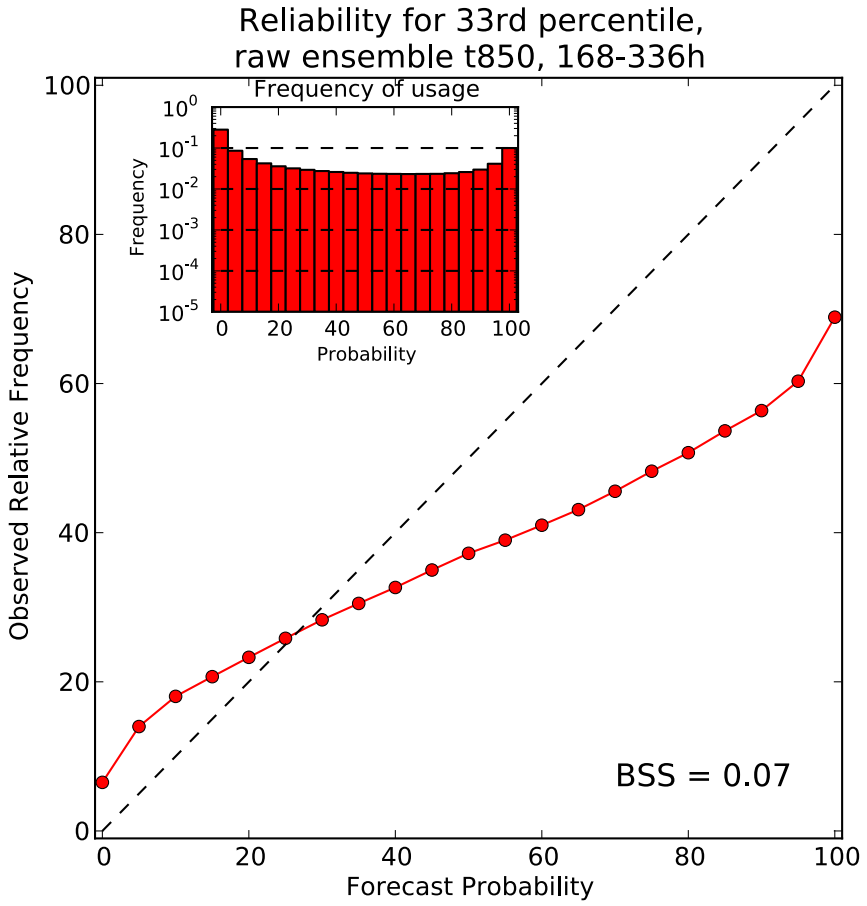


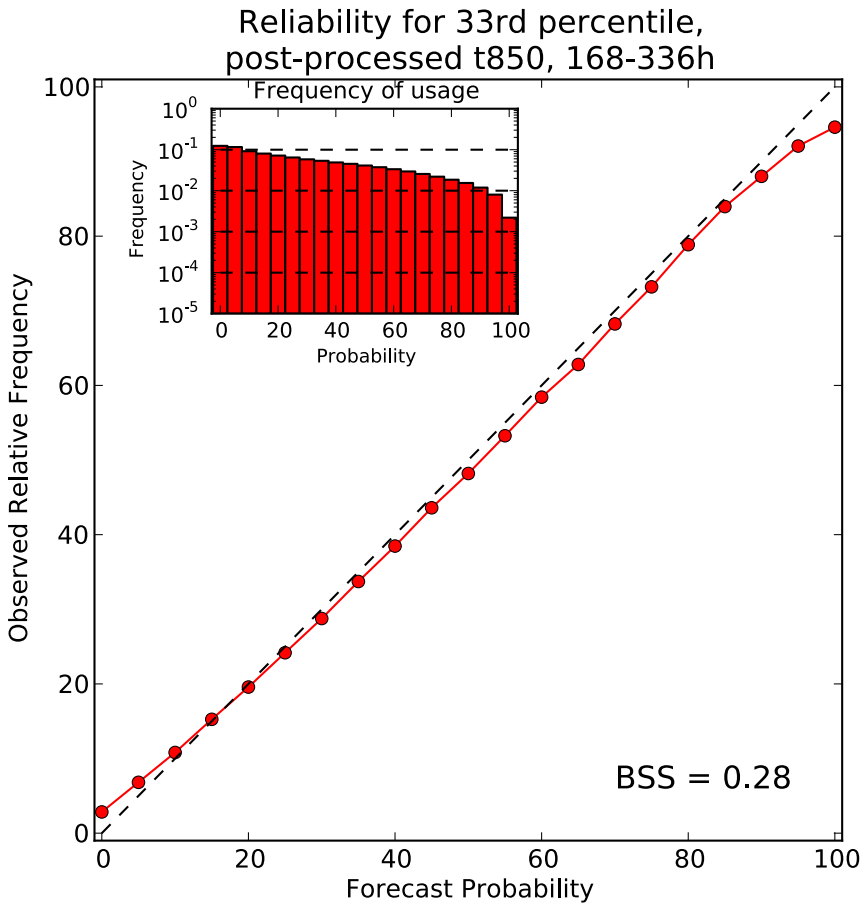
Lower quintile



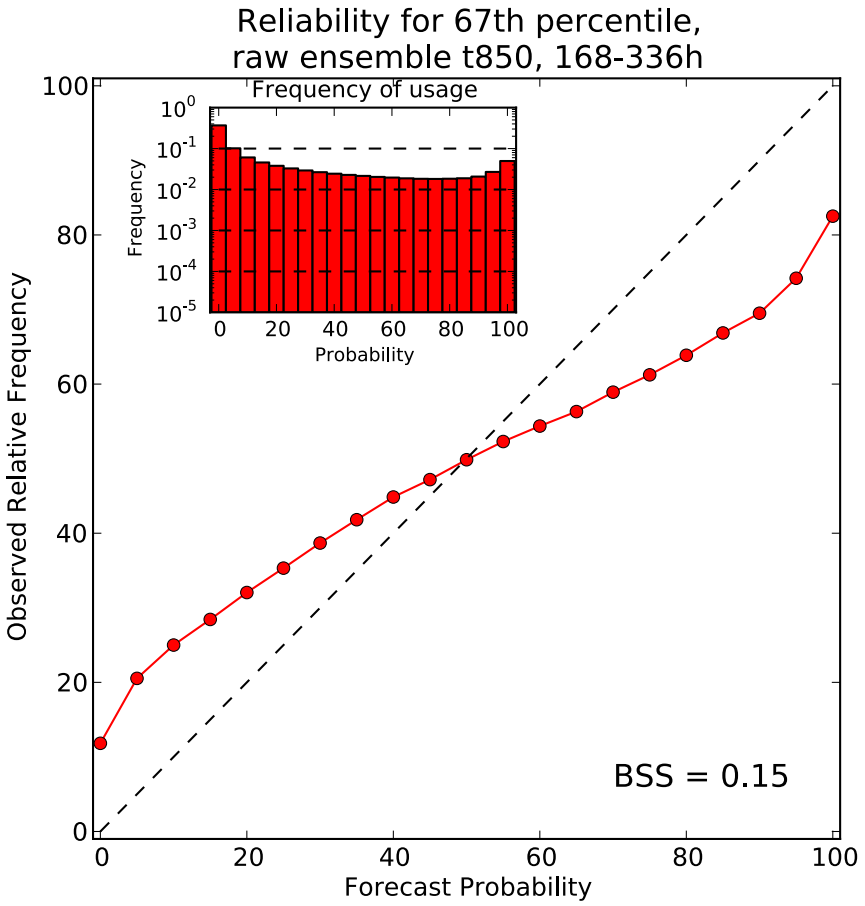


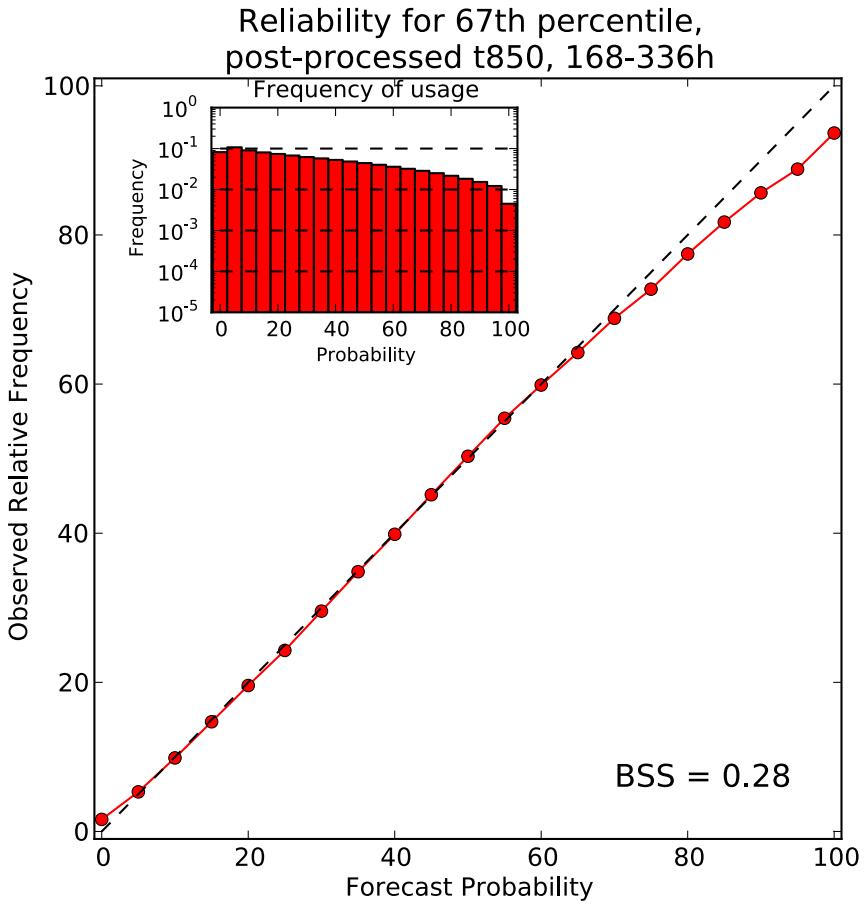
Lower tercile



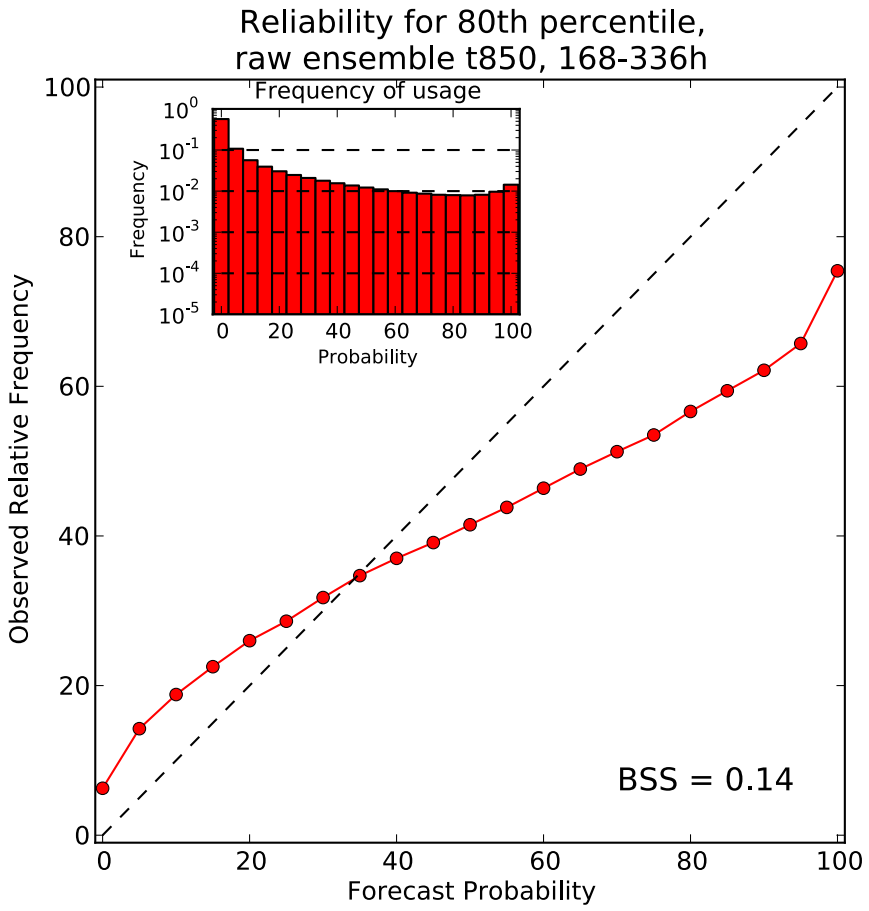


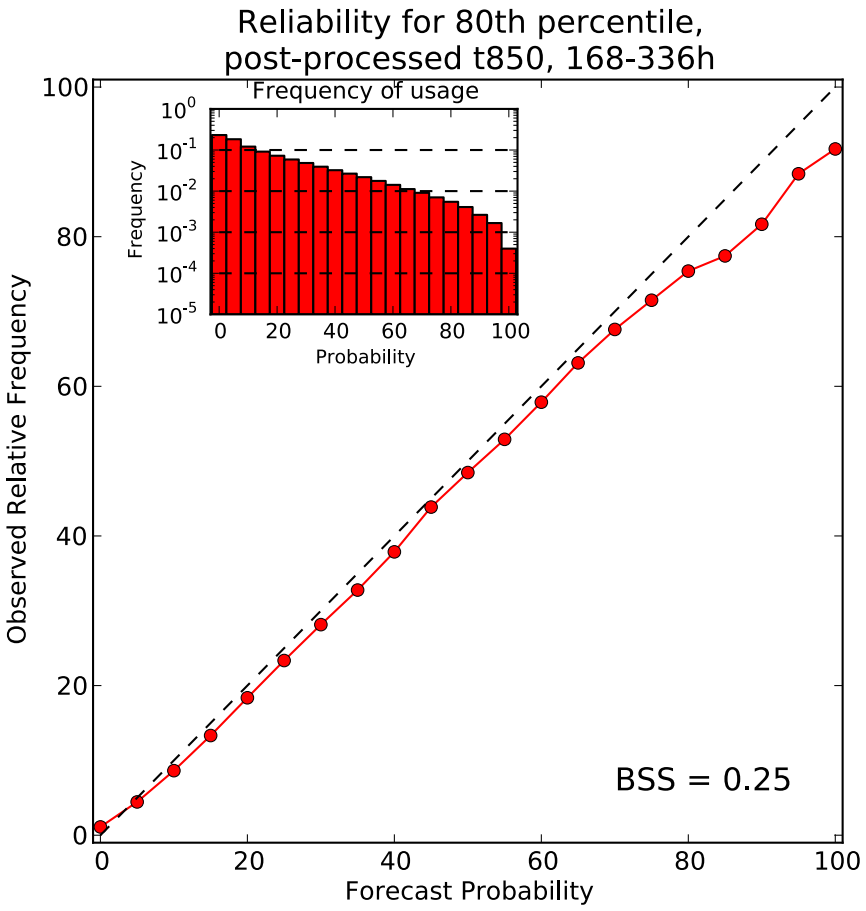
Upper tercile



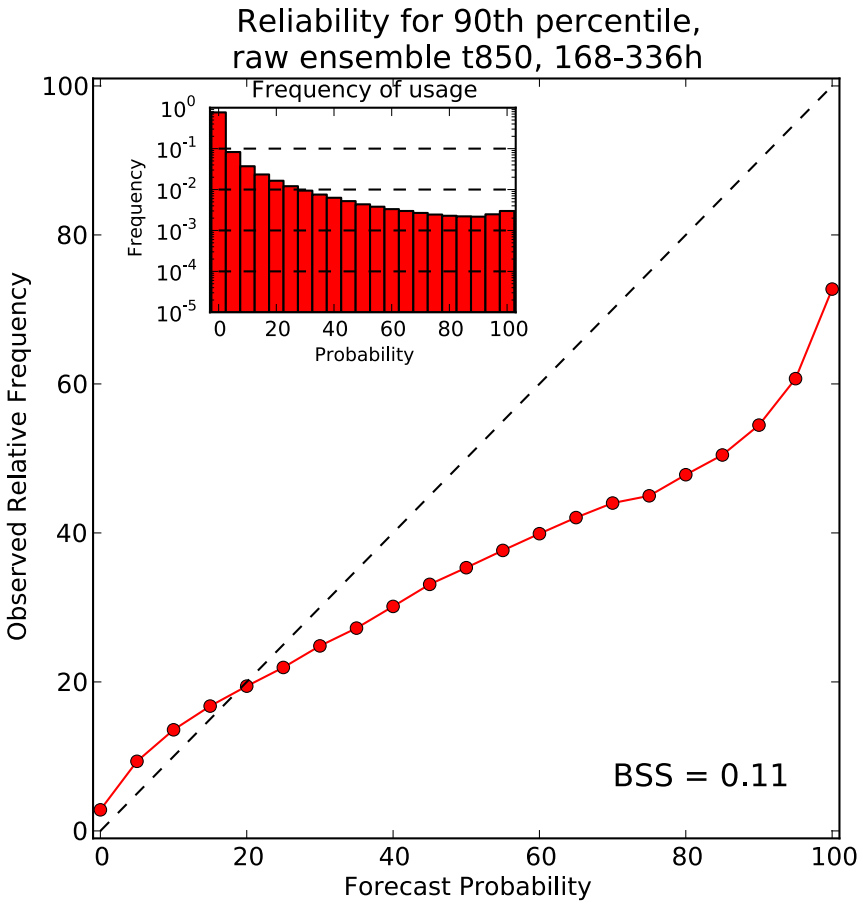


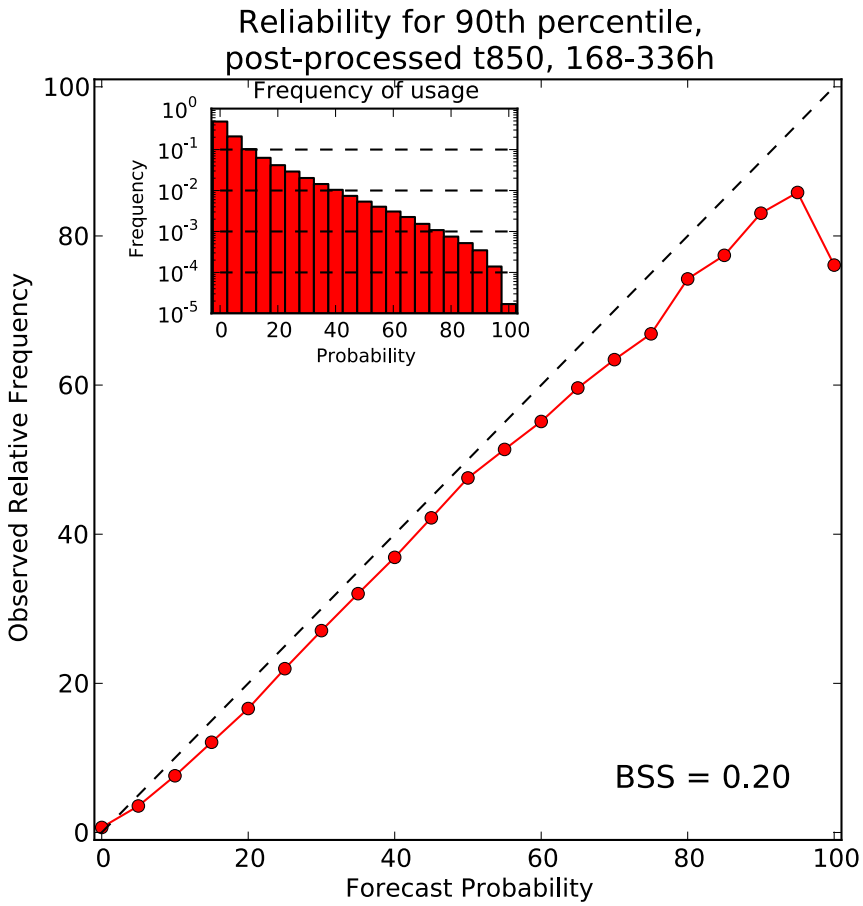
Upper quintile





Upper decile





Conclusions

- Reforecast-based post-processing of T850 for 6-10 days and week +2 appears to be working satisfactorily.
- Once we have surface CFSR data here at ESRL, we'll repeat for 2-meter temperature.
- Intend to replace our reforecast V1 web page in the next month or so with this.